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THE GESOLEI AT DÜSSELDORF[1]

From the date of the first international congresses on statistics (Brussels, 1851) and public hygiene (Brussels, 1852), one of the principal aims of physicians has been to educate the public as to ways and means of preserving health and warding off disease by "objective teaching" or visualization (*Anschauungsunterricht*). In the earlier stages, this was usually accomplished by graphs and diagrams designed to convey the net result of statistical computations to the mind's eye or photographs illustrating the ravages of communicable diseases and the known methods of preventing them. A little later, the Paris Exposition (1855) became the starting point of the many exhibits of apparatus, appliances and inventions illustrating advances in practical sanitation. Displays of this kind constituted a feature of all subsequent national or international exhibitions on a grand scale, particularly those held at Paris in 1867, 1878, 1889 and 1900, the Centennial at Philadelphia (1876) and the subsequent exhibitions at Chicago (1893), Buffalo (1901), St. Louis (1904) and San Francisco (1914). The attractive features and beautiful environs of Düsseldorf and Munich have made them natural centers for such *Ausstellungen*, and under the inspiration of Sudhoff, who was then practising in Hochdahl, a suburb of Düsseldorf, that city had three successive expositions devoted to the history of medicine and hygiene in 1898–9 and 1895. The culmination of these efforts was the great International Exposition of Hygiene at Dresden in 1911, the historical section of which (also got up by Sudhoff) comprised no less than 20,394 material objects, rang-

[1] Schlossmann, Bürgers *et al.*: Die Gesolei. Umschau, Frank. a M., 1926, xxx, 589–609.

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ing from prehistoric times to the middle of the 19th century. Through the European War and its consequences, Germany became so crippled as to financial resources and housing facilities that the idea of getting up expositions was until very recently unthinkable. At the same time, war-time propagandism introduced a new feature, the poster, with its possibilities of arresting attention by the grotesque phases of impressionism. The Gesolei at Düsseldorf (1926), which has been an object of intense interest to foreign visitors, is the first German hygienic exhibit of consequence since 1911, and has incurred some criticism as a waste of money in time of financial stringency, although it has given employment to some 15,000 people. It is unique in its determinate program of conveying results of statistical tabulations and computations by means of allegorical posters. A striking example of the efficiency of this method is to be seen in a cartoon in the advertising pages of current German medical periodicals, illustrating the fact that, as life insurance risks, the lean, lank attenuated people have better chances of longevity than the short, fat and stocky. The idea is conveyed by a parallel processional of lean and fat people toward an advanced age (80 or 90). Only the lank and attenuated reach the goal.

Gesolei is a newly coined word, compounded of the initial syllables of the German expressions for hygiene (*Gesundheitspflege*), social welfare (*Soziale Fürsorge*) and physical exercise (*Leibesübung*), the three main subdivisions of the exhibit, which was planned in 1924, by Prof. Arthur Schlossmann, the eminent pediatrist, with the cooperation of Dr. Robert Lehr, burgomaster of Düsseldorf, and Prof. Kreis, who is responsible for its artistic merits. The Hygienic Section, directed by Prof. Bürgers, of the Düsseldorf Medical Academy, comprises 12 sections, viz., 1, man in general; 2, heredity and racial hygiene; 3, air and climate; 4, nutrition; 5, man in relation to plants and animals; 6, habitations and settlements; 7, clothing and personal hygiene; 8, nursing; 9, communicable diseases; 10, colonial hygiene and tropical diseases; 11, industrial hygiene; 12, military and naval hygiene in the recent war; with special exhibits illustrating water supply, disposal of sewage, fire prevention, transportation of the sick and wounded and the like. Pictures, models, dummy figures, images, dioramas, diapositives, rhenoscopes and films are freely used.

There is a round-house called "The Transparent Man," in which Spalteholtz has installed representations of the brain and all other parts of the body in glass, thus extending the transparent anatomy of Leonardo da Vinci to three dimensions. There is a special pavilion devoted to Jewish hygiene through the ages, a House of the Physician, containing letters, prescriptions and portraits of famous medical men, a Physician's Garden, reproducing the cloister garden at St. Gall, a model first aid station, a display of the appointments of a model hospital, a model infant's home, an exhibit of "Two Thousand Years of Hygiene on the Rhine, in 15 dioramas devised by Haberling, three life-sized panoramas of the existence of prehistoric man and a "color-piano." The exhibit of water supply and disposal of sewage is of vast extent, showing their historic, technical and industrial aspects, with such features as a relief-model of the water-works of the Rhineland and Westphalia and a panorama of dams for protecting valleys from inundation. The disposal of excreta in remote antiquity begins with the primitive employment of the four principles of ancient medicine, earth, air, fire, water. Then come the gigantic drains of the Assyro-Babylonians, including models of sewer-piping from Assur (the oldest city of Assyria), and Babylon, the temple of Baal at Nippur (2000–1000 B.C.), the palace of Tikulti-Ninib (1250 B.C.), the palace of Sargon at Chorsabad (800 B.C.), and the Southeast palace of Nimrod at Nineveh (800 B.C.). All these structures reveal a remarkable proficiency in the mechanics of vaulted enclosures, archways and the junction and jointing of pipes. The Egyptian exhibit, from the mausoleum of King Sahu-re, goes to show that the great pyramids and temples had complete arrangements for the collection of rain water and the disposal of sewage by a vast system of copper pipes. Models of the sewerage system of the palaces at Knossos, Crete (3500 B.C.) and Tiryns (1450–1250 B.C.), as also specimens of canalisation from ancient Athens, Pergamon and Priene, indicate that the Greeks were nowise backward in sanitary engineering, as evidenced also by their elaborate washstands and shower baths and by an Athenian ordinance of 320 B.C., inflicting punishment for the casting of offal into the streets. Roman sanitary engineering is represented by models of the Cloaca maxima and of sewers from the Temple of Hercules (Rome),

Olmo and Aosta. The proneness of savages to cover up excreta with earth and sand is borne out by the remark of the Indian chief about army latrines: "White man must think a lot of filth to build a house around it." Yet water-closets have existed from remotest antiquity and the Gesolei displays models from Babylon, Nineveh, Knossos, Tell-el Amarna (1400 B.C.), Cairo (640 B.C.), Priene and Pompeii, with multiple arrangements in rectangular formation from Puteoli (45 seats) and in ring formation from the bathrooms of the Roman military station at Timgad in the Sahara (28 seats) and the palace of Augustus Caesar in Rome (3 seats). The ancient Egyptians usually preserved excreta in canopic jars, of which arrangement the cesspools of the Levantine countries are a variant. In the Middle Ages, in fact, the intuitive or immanent hygiene of the Greeks and the Romans disappeared. Squalor, filth, crime, shortage of food, epidemic diseases, infanticide and other evils of overcrowding were the portion of the mediæval walled towns for centuries. Municipal sanitary ordinances began to appear in the 13th century, quarantine regulations during 1374–1403. Sewerage and cleansing of sewers were reestablished in Rome by the Papacy in the 16th century. The Gesolei shows models of latrines from the cloister of St. Gall, from castles at Eltz on the Moselle, Bachrach and Oberwesel on the Rhine, from the Italian Castel del Monte (1240), the Hohenstauffen palace at Lagopesole (1250), from the Palazzo Davanzati at Florence (1300) and from the castles of the Teutonic order at Lockstedt and Thorn. The first German city to possess an adequate system for flotation and piping of sewage was Bünzlau (Silesia) in the 16th century. Until the middle of the 19th century, when sanitation acquired an *impetum faciens* from the cholera epidemics of 1831–49, little advance was made in water supply and sewage disposal. Extant plans of the water works of the German cities show the possibility of contamination by proximity to local abattoirs, tanneries and the like. The recent inventions of flush tanks, sand filters, soil filters, and of bacterial purification by means of septic tanks, irrigation fields, fish ponds, activated slime and the Imhoff system (Emscher Thal) may be seen in detail at the Gesolei, in the shape of a model house, transparencies showing the dangers from overflow

and from liquid explosives in sewer-pipes, with innumerable pictures and models.

The section on Social Welfare at the Gesolei proved a surprise to those who had predicted that, in the absence of worthwhile material, it would repel by piling up columns of unintelligible statistics. Precisely the merit of the Gesolei is that it is designed to instruct the people by methods common to the picture-writing of savages, the tavern-sign, the placard, the poster and the movies. Thus the recent birth and mortality rates of Germany are conveyed by a bell and clock-dial arrangement, punctuating the facts that every 24 seconds a child is born, every 72 seconds a couple is married, every 42 seconds some one dies. The longevity of the German population since the war is indicated by pyramids of dolls, tapering off into solitary dolls of advanced age, the decline in the birth rate and of the male population from battle losses being graphically emphasized. The Communal League of Social Welfare (organized 1925) exhibits a large model-city of the future, of half a million inhabitants. Under the trees of the Hofgarten, the model Infant Home, with glass walls, holds visitors for hours with its twelve lusty babies, sometimes in revolution on a merry-go-round. To this is attached a "light and air-bath" in which recuperation *via* the Liliputian railway and other outdoor pleasures is afforded to 20 children daily. The section is policed by women, who look after 150 needy people *per diem*. Among the most striking of the posters are those showing the 10 separate movements necessary to clean the teeth fore and aft, the tendency of houses to become damp in proportion to the number of children, the transmission of communicable diseases by animal and human carriers and the effect of preventive measures upon the incidence and mortality rates, the inflation of the sickness-insurance fund from 77 million marks (1891) to 2,091 million marks (1920) and its subsequent collapse, the causes of scarcity of habitations (*Wohnungsnot*) during 1919–24, the proportion of trees and grassplots in Prussia and the industrial districts on the Rhine, and the ratio of the number of children per family to child mortality per 100 in the following occupations: learned classes (2.7 : 5.4), officials and teachers (3.04 : 6.1), artistic professions (3.2 : 8.1), merchants (3.41 : 9), mechanics (3.83 : 15.6), clerks (4.31 : 16.3), day laborers (5.96 : 20.7). In spite of the

fact that plague, cholera and smallpox are now known by name only, it is shown that one-third of deaths are still due to communicable diseases. During 1918, 98,000 died from tuberculosis and 120,000 from Spanish influenza. The number of deaths from food shortage during the war period (1914–18) was 762,796 in the civilian population alone, which must be considered in connection with the tremendous war losses of the German army, viz., 1,531,048 killed, 4,211,469 wounded, 155,013 died from disease, 991,340 missing (total, 6,888,870).

The oxygen consumption of the body in different kinds of exercises is indicated by the proportionate burning of a candle, and the fact that the total area of the 350 million air chambers of the lungs (150 square meters) is 70 times greater than the surface area of the body (2 meters) is driven home on a poster showing a man against a wall 70 meters long and one meter in height. The section on physical exercise is handled in the same intelligent way. The development of Swedish movements (for the whole body) from gymnastics used long ago in the Swedish and Danish armies, the exhibit of gymnasium costumes of circa 1825, 1885 and 1925, the cubicle exhibits of the different societies devoted to hockey, tramping, riding, fencing, swimming, tennis, cycling and aviation, the fine fresco paintings of the Athenian Stadion and of the sports of mediæval chivalry, and the daily exhibitions of the different schools for rhythmic gymnastics and of other units of the Gymnastic League in the Planetarium, demonstrate the steady growth of Germanic interest in "sport" since the days of Turnvater Jahn and since the war. The coöperation of local organizations and of many commercial plants have made the Gesolei possible. It may not appeal to the sophisticated. Its merits and defects are those of an essential folk-exhibition, "of the people, for the people and by the people."

F. H. Garrison

THE WESLEY M. CARPENTER LECTURE

IONIZATION AND CHEMICAL REACTIONS

M. I. PUPIN
Columbia University

(Delivered before The New York Academy of Medicine, November 18, 1926)

Ionization is a new word in physical science. When I began to study physics forty-four years ago the word was not used in the college lecture rooms. It was born thirty years ago and it is the offspring of the Roentgen ray discovery. Behind this word there is a new science, the science of Electron Physics which has been created during the last twenty-five years. In this new science we have a beautiful union between the sciences of physics and chemistry. I shall try to explain briefly one of the aspects of this union. A brief sketch of its history will, I think, prove useful as an introduction.

The greatest scientific discovery of the nineteenth century is the discovery that light is an electromagnetic phenomenon. The glory of this discovery belongs to Michael Faraday, the Englishman, and to Clerk Maxwell, the Scotchman. It will forever be one of the greatest achievements of British science. According to Faraday and Maxwell radiation of light is an activity of moving electricity. This means that in every radiating body there is a rapid motion of electricity, so rapid indeed, that its oscillations count many millions per second. One of the obvious pictures which this suggests to our mind is as follows: There is an electrical charge attached to the atoms and molecules of material bodies and it must be very minute, otherwise it could not vibrate with the rapidity of the vibrations of light.

Franklin, nearly two hundred years ago, imagined that electricity had a minute granular structure, in order to explain the electrical current in a conductor. He represented it as the motion of tiny electrical granules through the interstices separating the conductor's atoms and molecules from each other. Franklin's intuition assumed a definite form when ninety years ago Faraday discovered that whenever a substance, say a salt solution, is de-

composed by an electrical current a definite but very minute electrical charge is attached to each chemical valency of the decomposed molecules. This is the so-called Faraday law of electrolysis. The motion of these charges constitutes according to Faraday the electrical current through the electrolyte. Thus when water is decomposed into oxygen and hydrogen then for each atom of oxygen there is twice as large a quantity of electricity set into motion as for each atom of hydrogen; oxygen has two valencies whereas hydrogen has only one. If in this decomposition the electrical charge moving with the oxygen is negative then that transferred with hydrogen is positive and numerically equal to it. In the undecomposed molecule of water both charges are present in equal amounts and, therefore, they exert no external electrical force. But the internal electrical force between them may be very great, and it was believed to be by far the greatest force which acts between the components of a material molecule. The action of this force can and has been accurately measured in very many cases and it is expressed in terms of the electromotive force which must be applied in order to produce a chemical decomposition of the molecule.

The greatest chemists of the early days of the nineteenth century, Berzelius and Sir Humphrey Davy, expressed a belief that the electrical forces between the components of the molecule are the principal forces which guide chemical reactions. This belief was suggested to them by the discovery of electrolysis in the beginning of the nineteenth century. Faraday was a disciple of Sir Humphrey Davy, and it is very suggestive indeed that his study of electrolysis furnished a powerful support to his teacher's scientific belief.

Faraday coined a new word, the word ion, the wanderer, and applied it to the carriers of electrical charges in electrolytic decomposition. Thus in the decomposition of water one component, the hydrogen atom, carries the positive charge in one direction and the other component, the hydroxyl, carries an equal negative charge in the opposite direction. The first is the positive and the second is the negative ion. Although it is not always possible to assign to each ion its definite chemical structure it is always certain that in electrolytic decomposition these ions do exist and that their motion through the electrolyte constitutes the electrical

current. Without this motion of the ions no continuous electrical current through any electrolytic solution is imaginable.

It was suggested by Clausius some sixty years ago that these ions exist in electrolytic solutions even when no electrical force is acting, and that the presence of the electrical force directs only their motion which manifests itself as the electrical current. Their existence, he believed, was due to the breaking up of the molecules of the dissolved salt brought about by collisions accompanying that chaotic heat motion of molecules which manifests itself as temperature. This hypothesis concerning the spontaneous generation of the ions was proved to be untenable, but their ever-present existence in electrolytic solutions was demonstrated in many different ways, particularly by measurements of the electrical conductivity of the solution, its osmotic pressure, rise of the boiling point and lowering of the freezing point. The experimental researches relating to this remarkable phenomenon, electrolytic dissociation, forms the experimental basis of Modern Physical Chemistry, which may be said to have been born forty years ago. But its broad theoretical foundation was laid fifty years ago by Josiah Willard Gibbs, of Yale, whose work remained unknown in this country for nearly twenty years. It was also unknown in Germany when I was a student there. I discovered it by accident and it supplied me forty years ago with material for a doctor's dissertation at the University of Berlin and so I was the first to talk about him in Germany, and to eulogize him. I had good reasons to believe that these eulogies had made some impression, because three years later Professor Ostwald, of Leipsig, announced that he had just discovered Willard Gibbs.

Svante Arrhenius, the distinguished Swedish chemist, was the first to call the attention of the physicist and of the chemist to the remarkable difference in the physical and chemical behavior of solutions which conduct electricity and those which do not conduct it, as for instance a solution of sulphate of copper and a solution of sugar. The first is a conductor of electricity and is decomposed by an electrical current; hence it is called an electrolyte. The second does not conduct electricity and, therefore, it cannot be decomposed by an electromotive force. Arrhenius was the first to explain clearly and convincingly this difference

in the behaviors of electrolytic and non-electrolytic solutions by the assumption, first made by Clausius, that in an electrolytic solution the molecules of the salt are broken up into positive and negative ions which in very dilute solutions act like independent molecules. The splendid experimental verifications of this assumption were so remarkable that no reasonable doubt could be entertained with regard to its correctness. This breaking up of the salt molecules in an electrolytic solution was called, forty years ago, dissociation; today it is called ionization, this last name being more acceptable to the terminology of the modern electrical theory of atomic structure.

Some chemists of the old school objected to the idea of dissociation on somewhat curious grounds. One of them speaks of it in the latest volumes of the Encyclopedia Britannica as follows:

> The war cry of the molecules, according to Arrhenius, is: "We will dissociate, nothing shall prevent us." The chemist had more belief in the moral character of the molecules and expected that they would observe the marriage tie.

This venerable chemist is not aware of the historical fact that in the marriage ceremony which unites the components of a molecule there is no tie which was ever declared to be sacred and which nothing but death shall sever. The components of a molecule are partners, only, with no other sentimental bond between them except an agreement to engage in chemical business transactions which will be of mutual benefit. To illustrate: Consider a hydrochloric acid molecule; it is a partnership between an atom of hydrogen and an atom of chlorine. A molecule of potash is a partnership between an atom of potassium and a molecule of hydroxyl. Dissolve them both in water and they will be dissociated into positive and negative ions, ready to engage in a chemical operation which actually takes place. A chemical reaction occurs forming a molecule of water and two free ions, one an atom of potassium carrying a free positive charge and the other an atom of chlorine carrying a free negative charge. They are an ionized molecule of chloride of potassium, ready and anxious for an opportunity to engage in a chemical reaction. This opportunity is given when, for instance, we drop into the

solution some nitrate of silver. This is ionized and immediately its positive ion, silver, unites with the negative ion, chlorine, forming chloride of silver. The reaction is rapid; almost instantaneous, showing the great eagerness of the dissociated partners in the chloride of the potassium molecule to engage in a chemical business transaction. The transaction was made possible by the action of water, the solvent, ionizing each molecule into a positive and a negative ion. The ionization gives to the partners in a molecule a directing electrical force which enables their affinity to play its part when suitable opportunity is offered. Even the small number of opponents of some of the theories of the modern school of Physical Chemistry acknowledge that Arrhenius and his school of Physical Chemists did a splendid service to the science of chemistry when they established the close relationship between ionization in electrolytic solutions and their chemical activity. This is particularly true of ionization and chemical reactions which proceed with a high velocity.

This, broadly speaking, is a picture which guided Arrhenius and others in their successful efforts to connect ionization and chemical reactions. They furnished a slendid verification of the prophetic intuition of Berzelius, Sir Humphrey Davy, and Faraday. Similar efforts have been made in other directions and they finally led us to the electrical theory of matter. They gradually suggested a new view of chemical reactions which is an extension of the view first revealed forty years ago by the study of ionization in electrolysis. Permit me now to give you a brief sketch of this advance in our knowledge of the atomic and molecular activity of matter. The path pursued by these efforts can be traced back to nearly forty years ago. It began when the earliest attempts were made to answer the question: why do gases conduct electricity? We were accustomed to think that gases were ideal non-conductors. It was found, however, that bodies carrying an electrical charge will gradually lose it by leakage through the surrounding gas. The word leakage of electricity meant, of course, that the surrounding gas conducts electricity; badly to be sure, but nevertheless it does conduct. Every school-boy who ever watched an electroscope was familiar with electrical leakage, but forty years ago nobody suspected that the commonplace phe-

nomenon, electrical leakage, would some day unlock the door of a chamber which guarded many secrets relating to the electrical activity of atoms and molecules.

The first step in the advancement of this knowledge was made when it was found that electrical leakage can be greatly increased by the action of external agents, like ultra violet light falling upon the surface of a charged body. The photoelectric cell, which plays a very important part in telegraphic transmission of pictures, is a very instructive illustration of this phenomenon. Guided by the theory of conductivity in electrolytes one was encouraged to imagine that the action of the ultra violet light produces an ionization of the gas molecules and that, just as in the case of electrolytes, this ionization is responsible for electrical conduction in gases. This guess was not a bad one, but it demanded an answer to a very perplexing question: How is the ionization produced by the action of ultra violet light? Observe now that a completely satisfactory answer to the question, how is ionization produced in electrolytes? was never given.

The search for a satisfactory answer to the question: How is ionization produced in gases resulted in the creation of the science of Electron Physics, one of the most beautiful creations in the history of science. Some future Homer in science will perhaps some day write an epic describing the wonderful adventures which scientific research, like an expedition into an unknown land, experienced on every step of its progress into the region of electrical conductivity of gases. The list of the heroes who played a glorious part in this expedition is as long as the list of heroes who found everlasting glory on the plains of Troy. But just as the name of Achilles rings in our ears whenever we hear Homer's Iliad mentioned, so the name of Thomson rings in my ears whenever ionization of gases is mentioned. This Thomson is Sir J. J. Thomson, Master of Trinity College, Cambridge, where immortal Newton composed his mathematical poem on *modern dynamics*, and where immortal Maxwell taught his electromagnetic theory to young J. J. Thomson, his successor in the chair of Physics at the University of Cambridge, and today Master of Trinity College, an honor much greater in many respects than to be the prime minister of England.

But pardon this digression; I forgot for a moment that my job this evening is to tell you a few things about "Ionization and Chemical Reactions" and not to recite poetry. But one cannot help losing control of his emotions whenever he contemplates the great scientific victories in the field of research relating to the electrical conductivity of gases.

Just as if imitating the method of procedure of the physical chemist who focused his attention upon the conductivity of electrolytic solutions of high dilution so the students of the electrical conductivity of gases focused their attention upon the conductivity of gases at low pressures. This was illustrated thirty-five years ago by the great revival of interest in the phenomena of vacuum tube discharges at extremely low gas pressures. The interest was rewarded by the discovery of the Roentgen rays thirty-one years ago. It was Thomson who first gave an experimental demonstration that the Roentgen rays are a radiation excited in the anode by the impact of small corpuscles moving with an enormous velocity and carrying tiny electrical charges of negative electricity from the negative to the positive electrode of the vacuum tube. Those who expected to find that these corpuscles were atoms carrying electrical charges which Faraday's law of electrolysis attaches to them were sadly disappointed. Thomson measured the ratio of this charge to the mass which carries them and found that this ratio is about eighteen hundred times as large as in the case of the smallest ion, the hydrogen ion. Nothing corresponding to that was ever found in electrolysis. Well, one was at liberty to imagine that Thomson's corpuscle was a tiny chip of an atom carrying a negative charge. Chip of an atom! Just think of it, who was bold enough in those days to imagine such a thing?

The discovery of radio-activity by Becquerel, thirty years ago, came to the rescue of the perplexed physicists. It was found that radio-active substances throw off positively as well as negatively charged corpuscles, the so-called alpha and beta rays, and also X-rays of great penetrativeness, called gamma rays in radio-activity. This discovery is one of the most remarkable discoveries ever made by man. Just think of it, a bit of a radio-active substance, say thorium, producing effects with ease and grace, some of which

Roentgen produced laboriously with huge induction coils and most carefully exhausted vacuum tubes. The alpha and the beta rays are deflected by the magnet, the gamma rays are not. Employing Thomson's experimental method it was found that the ratio of the charge to the mass was the same for the negative corpuscles, the beta rays, as in the case of the negative corpuscles of the vacuum tube, but for the positive corpuscles, the alpha rays, the ratio was smaller than that calculated for the hydrogen ion in electrolytic decompositions. That meant that the mass of the alpha corpuscles was larger than that of the hydrogen ion. The physicist was at liberty to imagine that the hydrogen ion is a chip of the alpha corpuscle. The physicist was puzzled more than ever, but in the course of a brief period of time the puzzle was resolved. It was found that the negative corpuscle was the same in all cases and it received the name electron. Its charge was accepted as the natural unit of negative electricity. The positive corpuscle corresponding to the alpha rays was found to be a helium atom with a mass four times as large as that of the hydrogen atom. Finally vacuum tube discharges revealed a positive corpuscle in which the ratio of the charge to the mass is the same as in the case of the hydrogen ion in electrolysis. It was found that its positive charge is numerically equal to the negative charge of the electron, and this became the natural unit for both electricities. It was also established by experiment that these corpuscles had no other mass except that due to their electromagnetic energy, that is the energy attached to their charges, the mass of the positive corpuscle being nearly two thousand times as large as the mass of the electron because its charge although numerically equal to that of the electron is two thousand times as concentrated. The mass of the hydrogen atom, for instance, is that corresponding to the electrical energy of its electrical corpuscles, that is, practically of its positive corpuscle. Matter and its mass as measured by the inertia reaction disappeared from the vocabulary of the physicist.

Such were the discoveries which forced upon the physicist the theory that the atoms of matter are electrical structures, built up of negative and positive corpuscles, of electrons and protons. Thus the hydrogen atom consists of a positive nucleus containing

one proton whereas a negative electron spins around it in orbital motion. The atom of helium has a positive nucleus, consisting of four protons cemented to each other by two electrons, and around this nucleus two electrons are moving in definite orbits, or to be more accurate the whole structure spins around its centre of gravity. Similarly every atom consists of a positive nucleus which is made up of protons and electrons which bind the protons to each other and of orbital electrons spinning around the centre of gravity of the structure. In other words each atom is a small solar system having a definite number of electronic satelites spinning with the central nucleus around the centre of gravity of the atom. The number of these orbital satelites is called the atomic number of the atom, and it is this number and not the atomic weight which determines the position of the atom in the Mendeleff series, thus determining its physical and chemical properties. According to this view of atomic structure all atoms are multiples of the hydrogen atom, which thus becomes the fundamental structural unit in the material universe. The fact that the atomic weight of heavier atoms is not an exact multiple of the atomic weight of hydrogen is a remarkable fact, but instead of militating against the electrical theory of matter it is one of its strongest supports. The discussion, however, of this fundamental fact in the electrical theory would lead me too far.

But you will undoubtedly ask, what additional light does all this electrical theory of matter throw upon Ionization and Chemical Reactions, which has been already described in connection with electrolytic ionization? A full answer to this question, though most interesting indeed, cannot be given in a brief address. The principal object of this lecture is to call your attention to certain phenomena which, I believe, are closely related to the science and art of the medical profession, and not to discuss them exhaustively. But one more point I must bring out as briefly and as clearly as I can. If the atoms persisted in that blessed state of beautifully coordinated orbital motion which I have just described to you there would be nothing of any importance to us going on in our stellar system. This stellar system would be a sleepy hollow in the universe, just as dead as the sleepy hollow cemetery at Tarrytown. There would be no light, no heat, no chemical reactions, and no organic life of any kind.

anywhere. The persistence of that beautifully coordinated orbital motion in the atoms would represent a beautiful cosmos, but it would be a cosmos of death. The atomic and molecular activity in our stellar system is not a cosmos; it is a dynamic chaos, a greater chaos than that conceived by the liveliest imagination of ancient Greece. The electrical theory of matter as well as all our scientific knowledge demand such a chaos, in order to explain radiation, the most fundamental physical process in nature. To illustrate, consider the activity of a hot star, say our own sun. Its high temperature means that its atoms and molecules are in a state of violent and perfectly chaotic motion. Each atom rushes along just like a frenzied individual of a panicky mob. Billions and billions of collisions occur at every instant between the whirling atoms and at each collision orbital electrons are thrown out of their regular orbits. The serene atomic cosmos just referred to is smashed. During the return of the electrons from their temporary expulsion and exile the energy employed for their expulsion appears again as energy radiated out into space. Some of it reaches this earth, destined to sustain our terrestrial activity. That energy is the life energy of the sun, so that solar radiation may be described as the breath of life of the sun breathed into the nostrils of this terrestrial clay so that it may also live. But during the absence of the orbital electrons, expelled by the collisions, the atom is ionized; it is no longer electrically neutral; it is in a similar state as an ion in an electrolytic solution; it is electrically active. This type of ionization is not a mere fiction, invented to support the electrical theory of matter. The alpha, beta, gamma, and X-rays produce it in every gas and make the gas conductive. A charged electrometer placed in a gas chamber is universally employed to measure by the leakage of its charge the ionizing power of such rays. There are other ways of producing ionization of gases, and we understand to-day much better than we did forty years ago why ultra violet light increases the leakage from an electrically charged body. Bold investigators like Millikan do not hesitate to employ most violent means, in order to strip the atoms of most of their orbital electrons and in that state of extreme ionization the atoms display an intense eagerness to enter into chemical combinations as if anxious to cover up as speedily as possible their atomic nakedness.

The ionization of the atoms is generally recognized as a stimulant for chemical actions, particularly those which proceed at high speeds. The function of the most powerful ionizing agents known to-day, that is the alpha, beta, gamma, and X-rays and ultra violet light, becomes intelligible from this point of view. This point of view is in harmony with the electrical theory of matter which endeavors to explain chemical reactions as due to the electrical activity of the atoms and molecules. Electrolytic ionization is one way of establishing this activity, atomic ionization is another. There may be many other ways. Who knows? The prophetic intuition of Berzelli, Sir Humphrey Davy, and Michael Faraday, now a hundred years old, has been proved to be true. The forces of the electrical charges attached to the valencies of the atoms are the most powerful guides in chemical reactions.

PERIARTERITIS NODOSA

FRANCIS HARBITZ, OSLO

(Abstract of a paper delivered before The New York Academy of Medicine, October 7, 1926.)

If we disregard syphilitic and tuberculous arteritis, little is known about this disease.

In the first place may be emphasized the frequent findings of microbes and inflammations in the walls of the *capillaries* and *in the small arteries* in the skin in cases of epidemic meningitis. The lecturer mentioned similar findings in gonorrhea with *gonococcus-sepsis* and eruption in the skin, as well as in croupous pneumonia with blisters and *pneumococci* in the skin. He also mentioned the peculiar changes in the *capillaries* and *small arteries* in exanthematous typhus.

In the next place it was pointed out that we may also find similar inflammatory changes in the *smaller* and *middle-sized* arteries. As examples hereof the lecturer mentioned the peculiar and characteristic changes observed in *periarteritis nodosa.* In illustration thereof he briefly described: (1) a case (in a man aged 32) with changes in the arteries, in the intestinal canal, kidneys and liver, as well as incipient changes in the heart; (2) a case

(in a man aged 22) with changes in the arteries, in the muscles and in the nerves of the legs, as well as in the kidneys and heart.

A general description of the disease was given and it was classified into: (a) a gastro-intestinal type, (b) a renal type, (c) a nerve and muscular type, (d) a cardiac type, (e) a cerebral type and (f) a form with prominent changes in the skin.

The acute commencement of the disease and its duration were discussed, likewise its point of origin in the adventitia of the arteries and in the surrounding tissue and its development into chronic forms with cicatrization and defects in the organs.

It was pointed out that cured cases have been observed and that mild and abortive forms may be seen and are perhaps not rare, while the disease may also possibly be local, *i.e.*, occur only in a single organ.

Periarteritis nodosa must be regarded as an acute inflammation in the small arteries, undoubtedly of infectious nature, and occasioned by a specific virus, but this virus is still unknown. There is much to be said in favor of the view that the disease may be due to an animal parasite and therefore we ought to keep in view the possibility of the disease being communicated by means of insects.

Also in the *larger arteries,* including the aorta, there may happen to be found real inflammatory changes and of infectious nature, sometimes with microbes in the walls of the arteries, notably in puerperal infection, in typhoid fever, in scarlatina, in pneumonia, in *acute rheumatism* (with Aschoff's bodies), in *influenza* with secondary sepsis with streptococci and in other infections.

The lecturer briefly described a case of chronic illness with increasing atrophy in the face and eyes. There was here found a peculiar inflammation in the aorta and the large arteries of the neck and head and complete thrombosis and obliteration of the arteries in these parts of the body, which was the cause of the increasing atrophy. No microbes were found.

Finally it was pointed out that infectious forms of arteritis are by no means rare, but are perhaps of more frequent occurrence than has been supposed. They deserve to be studied more closely both anatomically and etiologically, whilst also clinically they present many features of interest.

Abstracts of Papers Presented at Section Meetings

Combined Meeting of the Section of Neurology and Psychiatry, and the New York Neurological Society, November 9, 1926

A CASE OF MULTIPLE DURAL NEOPLASMS

E. D. Friedman

Helen W., a German housewife of 44, was admitted to Mt. Sinai Hospital on September 4, 1926. She had been a sufferer from epilepsy since the age of 14. The attacks were left-sided at first and only later became generalized. They ceased five months ago. There have been no menses since February, 1926.

Her present illness began about one year ago with headache. This was chiefly occipital and was accompanied by a drawing sensation in the neck. The headaches became progressively worse and at times were associated with vomiting. She noted recently that her vision had become poor.

On the morning of her admission to the hospital, she complained of diplopia. She also spoke of dizzy spells and occasional twitchings of the right upper extremity. The family had observed that her memory was failing and that she had become flighty. In walking, she would turn her head to the right. Occasionally she suffered from nocturnal enuresis.

The physical examination revealed slight inequality of the pupils with a little irregularity of the left. The fundi showed a low grade of papilloedema. The other cranial nerves seemed negative except for slight left facial weakness and some paresis of the right 6th nerve. Hearing was normal and vestibular tests gave normal responses. There was slight weakness of the left arm and leg and mild hyperreflexia on the left. The abdominals were not elicited. There was no Babinski sign. There were no frank cerebellar signs in the limbs. When walking, the patient tilted her head backward with the chin directed to the right and the occiput to the left. There was some asynergia of gait and station and a tendency to veer to the right. Her visual fields were grossly normal and there were no disturbances in sensation.

She was facetious and jovial. The examination was punctuated by humorous comments on the part of the patient and she apparently had no insight into the gravity of her illness.

The general medical status revealed no abnormalities. Blood pressure was a bit low—100/65. Urine was negative. Spinal fluid showed only a moderate increase in pressure. The signs pointed both to the right frontal lobe and to the posterior fossa. Ventriculography was attempted but the patient soon afterwards succumbed as a result of paralysis of respiration.

The post-mortem examination revealed numerous smooth, white, hard tumors on the inner surface of the dura. Most of them lay near the midline. They were more numerous on the right side. More than 25 such growths were counted. There were, in addition, neoplasms, similar in character on the inferior surface of the right tentorium, in the region of the right pontofacial angle and on the posterior margin of the foramen magnum. All of these apparently took origin from the inner surface of the dura but did not infiltrate the brain. The surface of the brain presented the evidences of increased intracranial pressure. In the right frontal region, near the midline and extending on to the mesial surface of the hemisphere, there was a large area which was soft, friable and discolored; apparently degenerative in character, and contained in its depth free blood. The right cerebral hemisphere was swollen about this region and produced a concavity on the mesial surface of the left frontol lobe due to pressure. This mass was not adherent to the overlying meninges. The floor of the 3rd ventricle was thinned out and bulging. There was evidence of a pressure cone at the base of the cerebellum. There was an era of erosion on the inner table of the skull in the right frontal region.

The post-mortem diagnosis was: Multiple endotheliomata of the dura, with large area of softening and degeneration in the right frontal lobe.

THE CHANGING MANIFESTATIONS OF THE NEUROSES

I. S. WECHSLER

I wish to make some remarks on the changing manifestations of the neuroses, and offer some explanations. The observations which I have to make are not altogether novel, and the explanations are perhaps not quite correct, but I venture both in the hope of getting some criticism and some discussion.

When one looks over various papers and text-books, even as recent as the 1924 revised edition of Oppenheim, one finds considerable attention devoted to the manifestations of the neuroses which we never see—hysterical hemiplegias, other paralyses, aphonias, astasia-abasia, and all sorts of conversion signs. But all those cases were abundantly seen by the older observers. It would be comforting to offer as an explanation the assumption that we are the better diagnosticians, but it is altogether doubtful. Men of the type of Charcot, Moebius, Weir-Mitchel, Binswanger, etc., were very accurate observers and they undoubtedly saw all the manifestations of the neuroses which we do not see to-day. But we have definite proof that they were right. If you take the first quarter of this century in which few of the hysterical paralyses have been observed, you find one island wherein tens of thousands of patients showed just those symptoms. I refer to the war. During that period, whether it was the phlegmatic Englishman, the stolid German, the volatile Frenchman, the somber Russian, or the composite American, they all showed the hysterical palsies, stammering, blindness and so forth. It is evident therefore that those hysterical manifestations can and do occur. It is we who do not see them in civil practice.

My observations are based on rather extensive experience at the Vanderbilt Clinic, which has a yearly admission of about 2,000 patients, on work at the Mount Sinai Hospital and Dispensary, at the Montefiore and the Central Neurological Hospitals, the last two of which have chronic cases. Among the thousands of cases seen personally I recall but one instance of hysterical convulsions such as described by Charcot, one or two hemiplegias and monoplegias, and a few aphonias. The question

is, why don't we see them? Why do not other American neurologists see them? What has happened in so short a time, or has anything happened at all? It seems to me there must be some explanation.

If you look on a neurosis as an attempt at adjustment, and if you accept the opinion that a neurosis is the result of a conflict, then you must concede that both the older and more recent manifestations of the neuroses are all attempts at adjustment. What we do see are anxiety neuroses, phobias, so-called neurasthenias, compulsion neuroses, maladjustment cases, borderline types. The former may be designated as low somatic types of adjustment, and the latter higher psychological types. Both are the results of conflicts and attempts at adjustments which the patients must make in order to hurdle life's difficulties.

I think it is conceded by many that religion (by that I do not mean the philosophical or speculative aspects, but the ceremonial and ritualistic) represents in a measure a neurosis which is accepted and condoned by society. When a person makes the sign of the cross, puts on phylacteries or salaams to the east he does exactly what the compulsive neurotic does when he goes through his ritual, fixing his pillow, counting numbers, or doing certain other things; with this difference, that the social compulsive act is not in conflict with the social group. In religious ritual the neurotic has his outlet for the neurosis: he need not get into conflict with society by begetting a neurosis. The Jew putting on phylacteries in the synagogue is considered perfectly sane; let him do it in the street and he would probably be apprehended as queer. Religious ritual, then, offers an outlet for individual neuroses.

If you take a Catholic girl who is disappointed in love, takes the veil and enters a convent, thus marrying her ideal, she escapes an individual neurosis because she loses herself in a social neurosis. The same procedure suddenly followed by a Mohammedan, Jewish, or Protestant girl would arouse grave suspicions as to her sanity. Throughout the ages waves of religious movements (tarantula dances, flagellations, crusades) expressed themselves in hysterical manifestations. To this day we have in this country epidemic or endemic revivalist meetings, in which whole communities find hysterical outlet. It may be observed that the very

loud hysterical shrieks which fundamentalist ritualistic fervor employs against modernism are only the signs of helplessness in a losing fight, of infantile neurotic reactions in the face of advancing reality. They may insist on erasing evolution from textbooks; their fight is but the last gasp before the avalanche of knowledge that is coming on to overwhelm reaction.

You may ask, if my observation is correct, can it be that one generation has brought about such a change in the manifestation of the neuroses? Even if we only reckon the period of recorded history, almost a hundred generations, what does one generation amount to? But it is quite possible that the intense and very rapid diffusion of knowledge in recent years, the familiarization with scientific facts, the spread of the knowledge of evolution, the weakening of religious ritual, have tended to mature the sense of reality and gradually prevented the widespread infantile, low level types of reaction to conflicts arising from the struggle for adaptation. A child will express his displeasure in the face of conflict by kicking or screaming, but the adult can no longer adopt the same method. This may be one explanation; but I should like to offer another, perhaps even more theoretical and philosophical: A neurosis is the penalty one may pay for growing up, or for the unsuccessful attempt to grow up. Growing to adult state is bound up with a great many difficulties, with the need of hurdling obstacles in the path of life. Those who cannot hurdle those difficulties will react with neuroses at one or another time. We see that at puberty, in adolescence, in social and love life. The neurosis represents the attempt at adjustment, the failure in the conflict and the flight from reality.

The question in my mind is, is it possible that groups, like individuals, go through the same stages of development? May we say that phylogenesis repeats ontogenesis, the reverse of what happens in general organic life? Before I develop this point a little further I should like to cite a few statistics. I have taken the records of the patients admitted to the Vanderbilt Clinic for the past few years. Fifty-five and a half per cent. of the total number of admissions to the neurological department represent neuroses. The colored population of the clinic showed only twenty-nine per cent. of neuroses. Then I compared the incidence among the American negroes and the British West In-

dians. You will all agree with me that the British West Indian negro is a better type than the American negro. He is more intelligent, better educated, and socially superior to his American brother. The American negro had 27.5 per cent. neuroses, and the British West Indian negro 35.5 per cent., about 8 per cent. higher than the American. The negro with better opportunities and perhaps a little more freedom has developed neuroses to a greater extent.

Again merely stating the question:—Does the group of necessity develop neuroses in its march upwards? I do not know either the incidence or types of neuroses among the Japanese and Chinese; nor do I know whether neuroses exist among primitive peoples. A priori I should say that there can be no neuroses among primitive people, because their whole social existence is a neurosis, an infantile reaction to life. The group spirit and force of taboo are so great that there is no possibility of revolt. One cannot transgress social usage or taboo without incurring the punishment of death. Only civilized man can afford the luxury of a neurosis. I do not know whether my speculations apply to all groups. I am merely wondering whether we can speak of a neurosis as a manifestation of the group in its march up the scale of civilization as of the individual in his growth up the tree of life.

Occasionally a neurosis is the revolt against social hypocrisy which forces people into ways of living to which they cannot possibly get used. Sometime I shall write an essay entitled, In Praise of Hypocrisy, with apologies to Erasmus' In Praise of Folly. It seems to me that the very violence with which the social group reacts to the hypocrite betokens a defense mechanism on the part of all of us. It is quite possible that diffusion of psychoanalytic knowledge, the realization of the mental mechanisms constantly at play and the influence of the psychology of emotivity on human thought and action will affect our methods of adjustment. Thus far it is premature to say that it has affected behavior. Besides the subject of psychoanalysis is too vast for discussion in this connection; here I can merely hint at it.

In summing up I wish to repeat the observation that we do not see the types of neuroses that have been classically described

in years gone by; that the older types are low level or somatic reactions; and that what we see to-day are higher psychological manifestations. Only the methods of adjustment have changed, not the reactions of the individuals or the need for neuroses. If anything, the conflicts have become more intense, the needs for neuroses greater and the social casualties more numerous.

ENCEPHALITIC AMYOTROPHIES

August Wimmer, Copenhagen

A brief report is given of a number of some twenty cases with well marked systematic amyotrophies, most commonly with a bilateral and distal topography, the wasting of the muscles thus spreading more or less rapidly upwards. In a series of cases the initial stage was of a "hemiplegic" type, in two cases only the proximal muscles were affected first. A wasting starting in the legs is very rare.

In fatally progressive cases the bulbar muscles are involved, in two cases causing the death.

There is no strict parallelism between the degree of muscular wasting and that of palsy. The muscular fibrillation is rare whereas myoclonic jerkings are very frequent. Other encephalitic signs may be present, yet did marked parkinsonism only occur in one patient.

An absence of the tendon reflexes is rare and, if present, only partial, bearing upon one or two reflexes. As a general rule the tendon reflexes are overactive or we get clonus. Not infrequently there is a marked Babinski reflex. An increase in the muscular tone is often found.

Thus the total picture of the systematic encephalitic amyotrophies mostly is very much alike to that of *amyotrophic lateral sclerosis,* "Charcot's disease." We are dealing, then, with a combinded lesion of the anterior horns and of the pyramidal tracts of the spinal cord.

A case with an almost pure "amyotrophic lateral sclerosis syndrom" is given together with the anatomical findings, *viz.*, combined lesions of anterior horns and pyramidal tracts through-

out the spinal cords and the bulbs. Thus, besides, encephalitic, inflammatory changes (perivascular infiltrations), such being present, also, in the brainstem and the basal ganglia without any parenchymatous changes.

Notwithstanding the seemingly "primary, systematic" degeneration of the spinal cord, the case is conceived as being a true encephalitic one. The spinal lesions should be more correctly spoken of as "funicular" and paralleled with those lesions found in pernicious anemia and in some cases of syphilis of the spinal cord (Erb's syphilitic spastic paralysis). The "systematic lesions" are supposed to be the direct effect of the encephalitic virus *in loco*.

Some suggestions are made in regard to the pathogenic conception of "Charcot's disease." The decrease of the syndrom of "amyotrophic lateral sclerosis" in chronic epidemic encephalitis gives a certain support to the idea of an infectious origin of this syndrom, as advanced by a series of authors.

Section of Pediatrics, November 11, 1926

ESSENTIALS IN THE PREVENTION OF TUBERCULOSIS IN INFANCY AND CHILDHOOD

S. Adolphus Knopf

Neither man nor woman has a right to enter marriage relations when actively ill with tuberculosis. Slightly tuberculous individuals with no activity, or apparently arrested cases may marry when it is possible to postpone their progeny until the disease is completely arrested. When, because of ignorance or religious prejudice an actively tuberculous woman becomes pregnant the best hygienic care must be provided for her, if possible in a sanatorium, and continued after childbirth. An expert obstetrician should attend to the confinement and facilitate delivery, if necessary by the employment of forceps, to prevent the exhausting bearing down efforts of a woman in labor, which are likely to bring about a pulmonary hemorrhage. At times, pregnancy seriously aggravates the tuberculous condition, particularly after

parturition, but the interruption of pregnancy in such cases should only be resorted to after careful consultation with two colleagues—an internist and an obstetrician—and with the consent of the husband.

The newly-born child of tuberculous parents should, if possible, be provided with a healthy foster mother and removed from tuberculous environments as soon as possible after birth so as to avoid infection by contact. When the provision of a foster mother is not feasible, artificial feeding must of course be resorted to either in a selected healthy family or in an infantorium. There are a few organizations now in the United States trying to do the work similar to Grancher's "Oeuvre pour la preservation des enfants tuberculeux," but not nearly enough. There does not seem to be a typical infantorium in existence in the United States at this time and the establishment of such life-saving institutions is urgently advocated by the author. The Farmingdale infantorium had to be abandoned for lack of means. It is hoped that Calmette's immunizing method, by the use of non-tuberculogenic modified bacillus, may materially aid in the prevention of an ultimate development of tuberculosis.

To prevent tuberculosis by ingestion, only the milk of tuberculin-tested cows should be given to children, and when the source of the milk supply is doubtful, sterilization should be resorted to. Orange or tomato juice should be added to the sterilized milk for the baby to supplant the destroyed vitamins.

Anemic children, or those of feeble constitution, so well designated by Grancher as presenting typical physiological poverty, should be tested with the "von Pirquet"(preferably intradermal) semi-annually up to the age of five. The same course should be pursued if the reaction is negative, when symptoms lead to the assumption that the presence of a tuberculous condition is likely. In examining small children for tuberculosis, one should bear in mind the frequent localization of tuberculosis in the hilus, the bacillus having lodged in the tracheobronchial lymphnodes and the difficulty encountered because we have no cooperation from the child in the production of the various types of breathing in bringing forth râles by cough or the elucidation of voice sounds. X-ray pictures therefore become an indispensable necessity. One should never fail to look for infected tonsils

which so often serve as portals of entrance of the tubercle bacillus.

All children of pre-school and school age and up to puberty should be tested for tuberculosis once a year. Positive reaction should lead to closer physical examination and preventive treatment if necessary. Annual general physical examination of all children attending school must become a universal practice if we are to combat tuberculosis in children and thus prevent them from becoming tuberculous adults, a burden to themselves and to the community.

It should be the aim of the pediatrist to prevent diseases in children predisposed to tuberculosis, such as diphtheria, scarlet fever, measles, and whooping cough, by the best prophylactic measures (vaccines, sera, and hygiene). Children showing stigma of scrofulosis or rachitis should be submitted to heliotherapy as a prophylactic measure at the earliest possible time. Open air schools should be provided for all anemic, strongly predisposed, actually tuberculous, scrofulous, and rachitic children.

The greatest danger of developing tuberculosis in the weak, predisposed, anemic, or underfed child comes with the approach of and during adolescence. We should be guided in the education, the choice of trade, profession or other calling for our young people by their physical condition before we let them out of sight. A physical examination should precede the choice of an occupation for our boys and girls. Semi-annual examinations during childhood and annual examinations throughout life are strongly advocated as one of the best means to combat tuberculosis in infancy, childhood, and adult life.

Section of Otology, November 12, 1926

PATHOLOGY OF BRAIN ABSCESS

JOSEPH H. GLOBUS

Under the title of "mobilization of tissue components of the brain as defence forces for the isolation and limitation of suppurative cerebral processes," observations were presented on membrane formation in brain abscesses. Lantern slides depict-

ing the histological changes noted in the early as well as in the late stages of abscess formation were shown. It was pointed out that even in the very early stage of focal suppuration in the brain, there is already evidence of capsule formation, as shown by proliferation of blood vessels by extravasation, and migration of lymphocytic elements into the zone enveloping the suppurating focus. This is followed by a progressive organization of the extravasated elements with the result that a distinct protective wall is formed which separates the abscess from the neighboring brain tissue. This capsule, if allowed to develop, grows in its thickness, acquires a dense fibrous character and provides ample protection to the adjacent tissue from the infectious, purulent process. Indeed, there are seen directly outside of this capsule vessels with adventitial infiltration. The infiltrating cells are mainly mononuclear in character and they as well as the proliferating, in the same zone, glia cells are elements called upon to participate in the construction of a protective limiting membrane. Such changes should for this reason not be regarded as evidence of an extension of the suppurative processes. Attention was also called to the fact that abscesses which have their localization in the so-called silent areas of the brain are lesions which often, by virtue of their location, do not give rise to early manifestations or fail to display signs and symptoms in the early stages of their development. In such abscesses the process of encapsulation goes on uninterruptedly. They often remain undisturbed by surgical measures, and in such event may undergo complete obliteration through the progressive growth of the capsule. It is particularly true of frontal lobe abscesses, which serve as good illustrations of the healing properties of the abscess capsule and emphasize the self-limiting character of a suppurative process in brain tissue. The question, however, is raised as to what extent can one rely upon this process of encapsulation in the treatment of brain abscesses. It can be best answered by the surgeon, who, it is thought, will take into account the above observations on the inherent potencies of the component tissues of the brain to isolate and combat a cerebral suppurative process.

Section of Obstetrics and Gynecology, November 23, 1926

ETIOLOGY AND TREATMENT OF RECTOCELE

B. P. WATSON

It is now generally recognized that it is fascia and not muscle which constitutes the principal support of the pelvic organs. Where support is given to any structure by muscle and fascia combined it is the latter which is essential. There can be no cystocele and no rectocele if the proper fascial supports of the bladder and rectum remain intact even if levator support is withdrawn.

The object of the present communication is to emphasize that just as the pubo-cervical layer of the pelvic fascia is essential to the support of the bladder, that cystocele results from its injury and that it can be made use of in the repair of the cystocele, so the fascia propria of the rectum is essential to the support of the anterior rectal wall, that rectocele cannot occur unless it is injured and this fascia can be made use of anatomically to effect its repair. The levator muscles covered by the anal and levator fascia support the lateral and posterior walls of the rectum but they give no support to the anterior rectal wall except its lowest part. This has been pointed out by Frank and other observers and has been confirmed by Caverly in a recently made dissection of the pelvic floor. The essential support of the anterior rectal wall is by the fascia propria.

The torn edges of this fascia can be easily demonstrated in the operative treatment of every case of rectocele and the fascial sheet can be defined and united over the prolapsed anterior rectal wall so as to control it absolutely.

According to the writer's experience the definition of the layer is best effected by scissors dissection. Incision is made round the posterior part of the vaginal orifice between skin and mucous membrane. Blunt pointed scissors are inserted through this incision midway between the middle line posteriorly and the anterior extremity. They are pushed upwards between the vaginal wall and the underlying structures, lateral to the rectum, and opened out. In this way the proper level of dissection is got at

once. The same is done on the opposite side. A firm grasp of this small area of separated vaginal wall is taken on each side with forceps. When these forceps are held upwards the level for dissection towards the middle line is at once seen and can be quickly carried out, with scissors or knife, with no danger of injuring the rectum. When the scar tissue in the middle line is thus dissected to its upper limit the raising of the flap can be easily effected. As the flap is raised two bands of tissue appear which at the upper limit of the rectocele are attached firmly to the under surface of the vaginal flap and between which, in the middle line, the rectal wall bulges. These two bands are the torn edges of the fascia propria of the rectum. If a little more lateral dissection of the flap is now carried out the levator muscles, covered by fascia, are exposed on each side. Instead of uniting this mass across the middle line, the fascia propria is separated from its under-surface by blunt scissors dissection and then appears as a broad fascial sheet. Beginning above the level of the rectocele sutures are passed through the face of this sheet on either side bringing two rolled edges together in the middle line thus controlling the rectocele. The sutures are under no tension and have no tendency to cut. When the suture is completed the rectocele is cured.

The operation is completed by suturing the levator muscle and fascia across the middle line and closing in the skin wound.

The important point in the operation is that the rectal fascia is united across the middle line without tension and exact anatomical conditions are restored. The union of the levator muscles does not reproduce normal anatomy and involves a considerable degree of tension.

The results so far obtained by this method have been most satisfactory.

PROCEEDINGS OF ACADEMY MEETINGS, DECEMBER, 1926

Stated Meeting

Thursday evening, December 2, at 8:30 o'clock

ORDER

I. Executive session.
Election of officers.
Action on amendments to the Constitution and By-Laws proposed at the Stated Meeting of November 4.

II. Papers of the evening.
a. Some aspects of the pathology of the liver, Douglas Symmers.
b. Diagnosis of diseases of the liver with respect to tests of function, Nellis B. Foster.
c. Lesions of the liver requiring surgical therapy, Allen O. Whipple.

Stated Meeting

Thursday evening, December 16, at 8:30 o'clock

ORDER

I. Executive Session.
II. The Anniversary Discourse.
"The Physician: The Larger View," Nicholas Murray Butler.

Section Meetings

Section of Surgery

Friday evening, December 3, at 8:30 o'clock

ORDER

I. Reading of the minutes.
II. Presentation of cases.

a. 1. Postoperative mechanical obstruction, twentieth day.
2. Postoperative obstruction, fifth day.
3. Postoperative paralytic ileus, seventeenth day, J. William Hinton.

b. 1. Lipoma of cecum—intussusception.
2. Fibroma of small intestine—intussusception, William Barclay Parsons, Jr.

III. Papers of the evening.
a. Foreign bodies in the intestine, Louis Carp.
b. Chills in acute appendicitis, Ralph Colp.

IV. Demonstration of specimens.
a. Foreign body in 22 months old baby.
b. Foreign bodies in an adult, Richard Lewisohn.

Section of Dermatology and Syphilis

Tuesday evening, December 7, at 8:00 o'clock

ORDER

I. Presentation of patients.
a. From the Vanderbilt Clinic:
1. Perifolliculitis suffodiens et abscedens.
2. Urticaria pigmentosa (adult).
3. Moniliasis of nails.
4. Hodgkin's disease with skin lesions.
5. Tuberculosis gingivae.
6. Lepra (6 cases).
7. Congenital syphilis with alopecia areata.
8. Erythema induratum resembling syphilis.
9. Extensive tuberculide.
10. Parapsoriasis (2 cases).
11. Lupus erythematosus treated with colloidal gold.
12. Lichen scrofulosorum.

J. Gardner Hopkins, A. Benson Cannon, George C. Andrews, Lawrence K. McCafferty, Herman Sharlit.

b. From the Good Samaritan Dispensary:
1. Thromboangitis obliterans (2 cases).
2. Acrodermatitis chronica atrophicans (2 cases).

3. Actinomycosis.
4. Parapsoriasis.
5. Urticaria pigmentosa (adult).
6. Dermatitis papillaris capillitii.

A. Walzer, B. Lapowski.

c. Miscellaneous cases.

II. Discussion.

III. Executive session.

Section of Neurology and Psychiatry

Combined meeting of the section with the New York Neurological Society

Tuesday evening, December 7, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Papers of the evening.

a. High cervical lesions in the guise of combined system disease, E. D. Friedman.

b. Laminectomy; its uses and indications, Alfred S. Taylor.
Discussion by Charles A. Elsberg, Byron Stookey, B. Sachs.

c. Prostitution of expert testimony in the criminal courts, Foster Kennedy.
Discussion by Joseph Collins, Smith Ely Jelliffe, M. Allen Starr.

d. Neokinesis; the contribution of the mammals to the evolution of the brain, Frederick Tilney.
Discussion by Smith Ely Jelliffe, Walter M. Kraus.

Section of Pediatrics

Thursday evening, December 9, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Papers of the evening.

a. A hospital dietary for children, as used in the City Hospital, Walter Lester Carr.
Discussion by Charles Hendee Smith.

b. The significance of the changes in the chemistry of the blood in pertussis, Joseph C. Regan (by invitation), Alexander Tolstovhov (by invitation).
Discussion by Stafford McLean.

c. Treatment of behavior problems in childhood, Dudley D. Shoenfeld (by invitation), William V. Silverberg (by invitation).
Discussion by Monroe A. Meyer (by invitation), Herman Schwarz.

III. General discussion.

SECTION OF HISTORICAL AND CULTURAL MEDICINE

Thursday evening, December 9, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Papers of the evening.

a. Demonstration of some rare medical books of the 15th and 16th centuries, Charles L. Dana.

b. The history of pathology, Major James F. Coupal, U. S. A., Washington, D. C. (by invitation).

III. Discussion, James Ewing, Ward J. MacNeal.

SECTION OF OTOLOGY

Friday evening, December 10, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Presentation of cases.

a. Diabetic mastoiditis due to the streptococcus mucosus capsulatus, with intracranial complications, Mark J. Gottlieb.

b. Acute suppurative labyrinthitis. Serous meningitis, recovery, Richard T. Atkins.

c. Traumatic mastoiditis with post-operative signs suggestive of an intracranial complication, Walter L. Horn.
d. Otitic meningitis running an unusually prolonged course, Samuel Rosen (by invitation).
e. Labyrinthine findings in:
   1. A case of pontine angle tumor.
   2. A case of tumor of the petrous bone, giving symptoms of cerebellar disease, Ralph Almour (by invitation).
f. Jugular bulb thrombosis, multiple abscesses, recovery, Floyd C. McDaniel (by invitation).
g. Procedure suggested for the diagnosis of sinus thrombosis, Reuben Ottenberg.
h. Primary jugular bulb thrombosis presenting certain unusual features, Joseph Druss (by invitation).
i. Two cases of cavernous sinus thrombosis complicating mastoiditis, occurring (1) before operation; (2) after operation, Wesley C. Bowers.

III. Discussion.

Section of Genito-Urinary Surgery

Wednesday evening, December 15, at 8:30 o'clock

ORDER

I. Reading of the minutes.
II. Presentation of instruments.
   A hypo-diathermic electrode, Joseph A. Hyams.
III. Presentation of cases.
   a. Squamous infiltrating carcinoma of the bladder (two cases) cured by radium six years and three years respectively, Benjamin S. Barringer.
   b. A case of ureteritis cystica, John H. Morrissey.
IV. Paper of the evening.
   Surgical aspects of polycystic kidney disease, with lantern slide demonstration, Robert E. Cumming, Detroit, (by invitation).
V. General discussion.
VI. Executive Session.

Section of Orthopedic Surgery

Friday evening, December 17, at 8:30 o'clock

ORDER

I. Reading of the minutes.
II. Presentation of cases.
    1. A case of calcinosis in a boy 9 years of age (lantern slides), Sara Welt-Kakels.
    2. From the Brooklyn Jewish Hospital.
        a. Traumatic separation of the symphysis pubis, Morris Koven (by invitation).
        b. Fracture of the acetabulum, Benjamin Koven (by invitation).
    3. From the Brooklyn Hospital.
        a. Myositis ossificans with operation, G. H. Hunter (by invitation).
        b. Rupture of biceps tendon (lantern slides), Donald E. McKenna (by invitation).
    4. From the United Israel Zion Hospital.
        a. Avulsion of the tibial tubercle, operation, Joseph Buchman (by invitation).
        b. A new operation for gluteus medius paralysis. Demonstration of case, David R. Telson (by invitation).
    5. From Long Island College Hospital.
        a. Picot spine fusion, J. C. Rushmore (by invitation).
        b. Tuberculosis of the astragalus, H. C. Fett (by invitation).
        c. Shelf operation for congenital dislocation of the hip, J. L'Episcopo.
III. Paper of the evening.
    Reconstruction operations on the hip joint, E. G. Brackett, Boston (by invitation).

Section of Ophthalmology

Monday evening, December 20, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Presentation of cases.
   a. Case of adeno-carcinoma of the upper lid extending into the orbit, H. W. Wootton.
   b. Vascularized gelatinous plaque in anterior chamber, Geo. H. Bell.

III. Paper of the evening.
   The anatomic relationship of the eye to the accessory sinuses of the nose, Simon L. Ruskin (by invitation).
   Discussion by Arnold Knapp, L. W. Crigler.

Section of Medicine

Tuesday evening, December 21, at 8:30 o'clock

ORDER

I. Papers of the evening.
   a. The present status of the classification of Bright's disease, Rolfe Floyd.
   b. The renal and cardio-vascular disorders of pregnancy—Their relation to certain general medical problems, William Worthington Herrick.
   Discussion, B. P. Watson (by invitation), Herman O. Mosenthal, Jean Corwin (by invitation).

II. Executive session.

Section of Laryngology and Rhinology

Wednesday evening, December 22, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Presentation of cases.
   Erosion of columella and anterior septum following encephalitis lethargica, Frank C. Keil (by invitation).

III. Papers of the evening.
   a. Implantation of radium seeds in malignancies of the larynx and œsophagus. Preliminary report with presentation of cases, Frank R. Herriman.
   b. Injection of iodized oil into the sphenoid sinus, A. Lobell (by invitation).
   Lantern slides.

Section of Obstetrics and Gynecology

Tuesday evening, December 28, at 8:30 o'clock

ORDER

I. Reading of the minutes.

II. Case report.

Primary carcinoma of the fallopian tube, David N. Barrows.

III. Papers of the evening.

a. A factor in the etiology of ectopic gestation, Henry C. Falk.

Discussion by Frederick C. Holden, Elise L'Esperance.

b. Urologic disorders following surgery in the female pelvis, Isador W. Kahn (by invitation).

Discussion by Walter T. Dannreuther, Daniel R. Ayres (by invitation).

RECENT ACCESSIONS TO THE LIBRARY

Ball, J. M. Modern ophthalmology. 5. ed.
Phila. Davis, 1926, 2 vols.

Beaumont, G. E. & Dodds, E. C. Recent advances in medicine. 3. ed.
Lond. Churchill, 1926, 408 p.

deBeer, G. R. An introduction to experimental embryology.
Oxford. Clarendon pr., 1926, 148 p.

Bentley, A. O. A text-book of pharmacy.
Lond. Baillière, 1926, 540 p.

van den Bergh, A. A. Hijmans. Vorlesungen über die Zuckerkrankheit.
Berlin. Springer, 1926, 226 p.

Bernhard, O. Light treatment in surgery.
Lond. Arnold, 1926, 317 p.

Besredka, A. Immunisation locale.
Paris. Masson, 1925, 251 p.

Bousfield, P. The pathology, diagnosis and treatment of functional nervous diseases.
London. Heinemann, 1926, 212 p.

Campbell, W. R. & Porter, M. T. A guide for diabetics.
Balt. Williams, 1926, 259 p.

Carleton, H. M. Histological technique.
Lond. Oxford pr., 1926, 398 p.

Cokkins, A. J. The reproduction of life.
Lond. Baillière, 1926, 287 p.

Crandall, I. B. Theory of vibrating systems and sound.
N. Y. Van Nostrand, 1926, 272 p.

Deniker, J. Les races et les peuples de la terre. 2. éd.
Paris. Masson, 1926, 750 p.

Ellis, H. Man & Woman. 6. ed.
Lond. Bladk., 1926, 563 p.

Evans, E. A psychological study of cancer.
N. Y. Dodd, 1926, 226 p.

Fairbairn, J. S. Obstetrics.
London. Oxford pr., 1926, 230 p.

Fowler, H. W. A dictionary of modern English usage.
Oxford. Clarendon pr., 1926, 742 p.

Freeman, F. N. Mental tests.
Lond. Oxford pr., 1926, 503 p.

Gibson, A. G. The heart.
Lond. Oxford pr., 1926, 108 p.

Graham, G. The pathology and treatment of diabetes mellitus. 2. ed.
Lond. Oxford pr., 1926, 230 p.

Haberland, H. F. O. Die operative Technik des Tierexperimentes.
Berlin. Springer, 1926, 336 p.

Henry, G. W. Essentials of psychiatry.
Balt. Williams, 1925, 199 p.

Hollingworth, H. L. The psychology of thought.
N. Y. Appleton, 1926, 329 p.

Immunochemical studies. Ed. by C. H. Browning.
Lond. Constable, 1925, 239 p.

Jackson, A. S. Goitre.
N. Y. Hoeber, 1926, 401 p.

Kato, G. The further studies on decrementless conduction.
Tokyo. 1926, 163 p.

Kells, C. E. Three score years and nine.
New Orleans. Author, 1926, 563 p.

Kingsley, J. S. Outlines of comparative anatomy of vertebrates. 3. ed.
Phila. Blakiston, 1926, 470 p.

Kirk, J. B. Hints on equipment & health.
London. Baillière, 1926, 120 p.

Latter, O. H. Biology.
London. Murray, 1926, 197 p.

Lieske, R. Kurzes Lehrbuch der allgemeinen Bakterienkunde.
Berlin. Borntraeger, 1926, 338 p.

MacKenzie, Sir J. & Orr, J. Principles of diagnosis and treatment in heart affections. 3. ed.
Lond. Oxford pr., 1926, 242 p.

Mills, F. E. I. Meatless meals made easy.
London. Theosoph. pub. house, 1926, 64 p.

Mohs, E. L. Principles of home nursing. 2. ed.
Phila. Saunders, 1926, 307 p.

Murchison, C. Criminal intelligence.
Worcester. Clark univ., 1926, 291 p.

Paul, K. C. The carrier problem.
Lond. Oxford pr., 1926, 102 p.

Porritt, N. The abdomen in labor.
Lond. Oxford pr., 1926, 73 p.

Proceedings of the Connecticut state medical society. 1926.

Proceedings of the Imperial social hygiene congress at the British Empire exhibition, Wembley. Oct. . . . 1925.
Lond. Brit. soc. hyg. council, 1926.

Pryde, J. Recent advances in biochemistry.
Lond. Churchill, 1926, 348 p.

Riesman, D. Thomas Sydenham, clinician.
N. Y. Hoeber, 1926, 52 p.

Robbins, S. D. Stammering and its treatment.
Bost. Stammerers' inst., 1926, 121 p.

Ruddiman, E. A. Pharmacy. 2. ed.
N. Y. Wiley, 1926, 379 p.

Stoddart, W. H. B. Mind and its disorders. 5. ed.
Lond. Lewis, 1926, 593 p.

Taylor, L. W., Watson, W. W. & Howe, C. E. General physics for the laboratory.
Boston. Ginn, 1926, 247 p.

Tod, H. Diseases of the ear. 2. ed.
Lond. Oxford pr., 1926, 333 p.
Waggoner, H. D. Modern biology; its human aspects.
Boston. Heath, 1926, 482 p.
Watson, J. H. Fundamentals of the art of surgery.
Lond. Heinemann, 1926, 349 p.
Williams, L. Obesity.
Lond. Oxford pr., 1926, 171 p.
Wooten, K. W. A health education procedure.
N. Y. Nat. tub. assoc., 1926, 420 p.

COMMITTEE ON MEDICAL EDUCATION

Approved Opportunities for Graduate Medical Study in New York City

As a result of the annual survey which was made by the subcommittees of the Committee on Medical Education, the Committee announces that the following courses and internships have been approved:

DERMATOLOGY-SYPHILOLOGY

1. *New York University.*
   Comprehensive course of one or two years' work.
   Group of seven courses.
2. *Columbia University.*
   Comprehensive course of two years' work.
   Group of seven courses.
3. *Cornell University Medical College.*
   Group of four courses.
4. *New York Skin and Cancer Hospital.*
   Two clinical courses.
   Three special internships.
5. *Polyclinic Medical School and Hospital.*
   Two courses.
6. *Post Graduate Medical School and Hospital.*
   One assistantship.
7. *Mt. Sinai Hospital.*
   One clinical course.
8. *Good Samaritan Hospital.*
   One clinical course.
9. *Bellevue Hospital.*
   Attendance in clinic.

10. *Kings County Hospital.*
    Two courses.

INTERNAL MEDICINE

1. *Columbia University.*
    Five weeks' practical course, full day. At the Presbyterian Hospital.
    Group of 15 short courses. At the Mount Sinai Hospital.
    Conferences in medical diagnosis and pathology. At the Presbyterian Hospital.
    Two short courses in gastro-enterology. At the Vanderbilt Clinic.
    Group of three short courses in chronic diseases. At the Montefiore Hospital.
    SCHOOL OF TROPICAL MEDICINE.
    Eight months' course.
2. *Post Graduate Medical School and Hospital.*
    Three seminars of one month each, full day's work.
    Eighteen special courses.
3. *Polyclinic Medical School and Hospital.*
    Six weeks' course, full day.
4. *Cornell University.*
    Course in metabolism methods.
5. *Beth Israel Hospital.*
    Course in cardiology.
6. *Graduate Courses in Brooklyn.*
    Four intensive courses.
    Twenty-five extension courses.
7. *Special Internships.*
    One appointment in Mount Sinai Hospital.
    One appointment in Montefiore Hospital.
    Four appointments in Bellevue Hospital.
    Four appointments in City Hospital.
    Eight appointments in Willard Parker Hospital (contagious diseases and Pediatrics).
    Four appointments in Riverside Hospital (contagious diseases and Pediatrics).
    Six appointments in Kingston Avenue Hospital (contagious diseases and Pediatrics).
    Two appointments in Queensboro Hospital (contagious diseases and Pediatrics).
    One appointment in Beth Israel Hospital.
    One appointment in Long Island College Hospital.
    One appointment in Post Graduate Hospital.
    Four appointments in Bellevue Hospital.
    One appointment in Metropolitan Hospital.
    One appointment in Lenox Hill Hospital.

NEUROLOGY AND PSYCHIATRY

1. *Columbia University.*
   Group of eighteen courses at various hospitals.
2. *Neurological Institute.*
   Post graduate clerkship.
3. *Post Graduate Medical School and Hospital.*
   Two special courses.
4. *Polyclinic Medical School and Hospital.*
   Two clinical courses.
5. *Cornell University.*
   Three courses.
6. *In Brooklyn.*
   Three extension courses.
7. *Special internships.*
   Two in Bellevue Hospital.
   Two in Mount Sinai Hospital.
   One in Montefiore Hospital.
   Four in Neurological Institute.

OBSTETRICS AND GYNECOLOGY

1. *New York Polyclinic Medical School and Hospital.*
   Six months' combined course, full day.

Obstetrics

1. *Lying-In Hospital.*
   Two courses.
2. *Post Graduate Medical School and Hospital.*
   Manikin course.
3. *In Brooklyn Hospitals.*
   Seven extension courses.

Gynecology

1. *Post Graduate Medical School and Hospital.*
   One month's seminar, full day's work.
   Eight special courses.
2. *Polyclinic Medical School and Hospital.*
   One short course.
   One operative course (cadaver).
3. *Columbia University.*
   Two short courses at Mount Sinai Hospital.
4. *In Brooklyn Hospitals.*
   Two extension courses.

Special Internships in Obstetrics and Gynecology

Eight in Lying-In Hospital.
Twelve in Woman's Hospital.

One in Nursery and Child's Hospital.
Six in Long Island College Hospital.
Three in Manhattan Maternity Hospital.
Eight in Berwind Maternity Clinic.
One in Harlem Hospital.
One in Mount Sinai Hospital.
One in Roosevelt Hospital.
One in Brooklyn Hospital.
Nine in Sloane Hospital for Women.
Thirteen in Bellevue Hospital.
One in Community Hospital.
One in Bronx Maternity Hospital.
Three in Jewish Maternity Hospital.
One in Brooklyn Hebrew Maternity Hospital.
One in New York Foundling and St. Ann's Maternity Hospital.
Eight in City Hospital.
One in Lenox Hill Hospital.

OPHTHALMOLOGY

1. *Post Graduate Medical School and Hospital.*
   Two four-month seminars. Full day.
   Eleven special courses.
   Two internships.
2. *Polyclinic Medical School and Hospital.*
   Combined eye, ear, nose and throat course. Eighteen months.
   One operative (Cadaver).
   One short clinical course.
   One refraction course.
3. *New York Eye and Ear Infirmary.*
   Nine special courses.
   Twelve internships.
4. *Manhattan Eye, Ear and Throat Hospital.*
   Five internships.
5. *Knapp Memorial Eye Hospital.*
   Two internships.
6. *Graduate Courses in Brooklyn.*
   One intensive course.
   Three extension courses.
7. *Bellevue Hospital.*
   Three internships.
8. *Mount Sinai Hospital.*
   One internship (Combined).
9. *City Hospital.*
   Four internships (Combined).
10. *Lenox Hill Hospital.*
    One internship (Combined).

ORTHOPEDIC, TRAUMATIC AND REHABILITATION SURGERY, AND PHYSICAL THERAPY

1. *Post Graduate Medical School and Hospital.*
   Two months' seminar, full day.
   Twenty-one special courses.
2. *Polyclinic Medical School and Hospital.*
   Nine months' graded course for specialists.
   Three months' course for general surgeons.
   Six weeks' course for the general practitioner.
   Three months' course in traumatic and industrial surgery.
   Operative cadaver course.
   Six weeks' course in physiotherapy technique.
3. *Hospital for Ruptured and Crippled.*
   Six weeks' course, full day.
4. *Hospital for Joint Diseases.*
   One month's course, full day.
5. *Reconstruction Hospital.*
   Three weeks' course, full day.
6. *Columbia University.*
   Six weeks' course in physical therapy at Beekman Street Hospital.
   Two courses in physical therapy at Reconstruction Hospital.
7. *In Brooklyn Hospitals.*
   Three extension courses.
8. *Special internships.*
   Ten in Hospital for Ruptured and Crippled.
   Seven in Hospital for Joint Diseases.
   Six in New York Orthopedic Hospital.
   One in Montefiore Hospital.
   Two in Reconstruction Hospital.

OTO-LARYNGOLOGY

1. *Columbia University.*
   Six months' course, with special internship in Bellevue Hospital.
2. *Post Graduate Medical School and Hospital.*
   Seminar of eight months, divided into basic and advanced courses.
   Forty-one special courses.
   Four special internships.
3. *Polyclinic Medical School and Hospital.*
   Combined eye, ear, nose and throat course.
   Nine short courses.
4. *Manhattan Eye, Ear and Throat Hospital.*
   Seven internships.
5. *New York Eye and Ear Infirmary.*
   Special courses.
   One internship.

6. *Cornell University.*
   One short course in clinical laryngoscopy.
7. *Graduate Courses in Brooklyn.*
   Five extension courses.
8. *Mount Sinai Hospital.*
   Two special internships.
9. *Bellevue Hospital.*
   Four special internships.
10. *Lenox Hill Hospital.*
    One internship.
11. *St. Luke's Hospital.*
    Three internships.
12. *Long Island College Hospital.*
    One internship.

PEDIATRICS

1. *Columbia University.*
   Two months' course of full day's work.
   Group of seven six-weeks courses. Mt. Sinai Hospital.
2. *Post Graduate Medical School and Hospital.*
   Six to twelve months' course of full day's work.
   Sixteen special courses.
3. *Polyclinic Medical School and Hospital.*
   One three months clinical course.
4. *Graduate Courses in Brooklyn.*
   One intensive course.
   Eleven extension courses.
5. *Pediatric Internships:*
   Seven in Bellevue Hospital.
   Four in Babies' Hospital.
   Three in St. Mary's Free Hospital for Children.
   Five in Nursery and Child's Hospital.
   Five in New York Infirmary for Women and Children.
   Two in Mount Sinai Hospital.
   Three in New York Foundling and St. Ann's Maternity Hospital
   Two in Presbyterian Hospital.
   Two in Lenox Hill Hospital.
   One in Post Graduate Hospital.
   One in Metropolitan Hospital.
   One in Fifth Avenue Hospital.

ROENTGENOLOGY

1. *Post Graduate Medical School and Hospital.*
   Six courses.
2. *Polyclinic Medical School and Hospital.*
   Three courses.
3. *New York University.*
   One course.

4. *New York Hospital.*
   One course.
5. *New York Eye and Ear Infirmary.*
   One course.
6. *Eighteen special internships.*
7. *Seven special externships.*

SURGERY

1. *New York University and Bellevue Hospital Medical College.*
   Two and one-half years' comprehensive course.
2. *Columbia University.*
   Group of six courses in surgery and gynecology at the Mount Sinai Hospital.
3. *Post Graduate Medical School and Hospital.*
   Seminar in general surgery, full day. Six weeks to six months.
   Four special courses.
   Seven special courses in operative surgery.
4. *Polyclinic Medical School and Hospital.*
   Nine months' combined course. Three short courses.
5. *Graduate Courses in Brooklyn.*
   Twelve extension courses.
6. *Special internships.*
   One in Post Graduate Hospital.
   Four in Mount Sinai Hospital.
   One in Montefiore Hospital.
   Two in Skin and Cancer Hospital.
   Three in New York Hospital.
   Two in Bellevue Hospital.
   One in Lenox Hill Hospital.
   One in Beth Israel Hospital.
   One in Metropolitan Hospital.
   One in Fifth Avenue Hospital.
   One in St. Mark's Hospital.

UROLOGY

1. *Post Graduate Medical School and Hospital.*
   Six months' comprehensive course, full day.
   Nine special courses.
2. *New York Hospital.*
   One six months' course.
   One special internship.
3. *Roosevelt Hospital.*
   One private course.
   One special internship.
4. *Graduate Courses in Brooklyn.*
   Four extension courses.

5. *Bellevue Hospital.*
   Two special internships.
6. *Long Island College Hospital.*
   One special internship.

MEDICAL SCIENCE OR PRE-CLINICAL SUBJECTS

Anatomy

Cornell University Medical College.
Seven courses.
New York University.
Two courses.
Columbia University.
One course.
In Brooklyn.
One intensive course.

Bacteriology and Immunology. Laboratory Technique

Cornell University Medical College.
One course.
New York University.
Two courses.
Columbia University.
Three courses.
Post Graduate Medical School and Hospital.
Five courses.

Chemistry, Biochemistry and Metabolism

Cornell University Medical College.
Four courses.
New York University.
Three courses.
Columbia University.
Seven courses.
Post Graduate Medical School and Hospital.
Five courses.

Pathology

Cornell University Medical College.
Four courses.
New York University.
Two courses.
Columbia University.
Four courses.
Post Graduate Medical School and Hospital.
Seven courses.
Polyclinic Medical School and Hospital.
Three courses.

In Brooklyn.
One extension course.

PHARMACOLOGY

Cornell University Medical College.
Two courses.
New York University.
Three courses.

PHYSIOLOGY

Cornell University Medical College.
Two courses.
New York University.
One course.
Columbia University.
Two courses.

MEDICAL VISITORS TO NEW YORK

The New York Academy of Medicine desires to extend a welcome to all members of the medical profession who may visit New York. It offers its facilities in the hope that they may be helpful in making the visitors' stay both pleasant and profitable.

The Library (open from 9 A. M. to 5 P. M.) is one of the largest of its kind in the United States, and over a hundred readers visit it every day. It contains upwards of 140,000 books and over 100,000 pamphlets, which are fully catalogued. Its files of American and foreign periodicals are very complete.

Meetings. Besides the two stated meetings of the Academy held each month there are monthly meetings of the twelve different groups of Fellows organized into sections devoted to various branches of medicine and surgery and to historical and cultural medicine. These stated and section meetings are open to all physicians and to medical students. In addition to these meetings many medical societies of the city hold their meetings at the Academy. There are usually one or more meetings held at the Academy each night of the month except Sundays and holidays.

The Committee on Public Health Relations. At the office of the Committee on Public Health Relations, pertinent information

is gathered with regard to the health activities of the municipal and voluntary social service agencies. Studies are made of problems bearing on public health administration as well as on the work of hospitals, dispensaries, and other agencies dealing with the community relationships of medicine, and reports are issued. Some of these reports are available for distribution.

Bureau of Clinical Information. The Bureau is maintained by the Committee on Medical Education. It offers detailed information regarding opportunities for graduate medical study in New York and other cities of the United States and Canada. The Bureau has prepared a guide in which the opportunities for clinical study in the hospitals of the city are listed and described. It also publishes a daily bulletin of medical and surgical clinics of the city. Physicians are invited to make the Bureau their headquarters while in the city.

OPENING OF THE NEW BUILDING

The opening of the new building of The New York Academy of Medicine on Fifth Avenue and 103rd Street was celebrated by a dinner at the Waldorf-Astoria Hotel on the evening of November 17 in honor of the newly-elected Honorary Fellows. Formal opening exercises were held at the new building on the next afternoon, followed in the evening by the presentation of the newly-elected Honorary Fellows, and the Carpenter Lecture by Professor Michael I. Pupin, of Columbia University. The Library was opened for consultation on the following morning, November 19, having been closed for the preceding ten days while the books were being moved from the old building on Forty-third Street.

The Dinner

The banquet hall of the Waldorf-Astoria Hotel was completely filled by the guests, when after the elaborate dinner had been disposed of Dr. George D. Stewart introduced as the first speaker Dr. Harvey W. Cushing, of Boston, surgeon-in-chief of the Peter Bent Brigham Hospital. Dr. Cushing spoke of the library as a factor in the medical field, giving a brief outline of the history of the Boston Medical Library Association, which was founded over

a hundred years ago. Dr. Stewart next introduced Hon. James J. Walker, Mayor of the City of New York, who said, among other things, that when it became necessary for him to appoint a Commissioner of Health he consulted the Academy of Medicine. Dr. George E. de Schweinitz, professor of ophthalmology, University of Pennsylvania, spoke as a representative of the College of Physicians of Philadelphia. Dr. William Sydney Thayer, professor emeritus, Johns Hopkins University, pictured the emotions which would be felt by Laennec, the anniversary of whose birth happened to coincide with this celebration, if it were possible for his spirit to take part in these festivities. Sir Ewan John McLean, professor of obstetrics, University of Wales, Cardiff, spoke briefly as the representative of the British Medical Association.

Formal Opening

The formal opening of the new building on the afternoon of November 18 began with an invocation by the Reverend Henry Sloane Coffin. The president of the Academy, Dr. Samuel A. Brown, presented a brief address on "The Services of the Academy in Medical Progress," and Dr. Arthur B. Duel, chairman of the building committee, reviewed the building of the Academy. An informal reception followed, tea being served and the guests invited to inspect the building.

In the evening Honorary Fellowships were conferred on the Honorary Fellows, the citations being read by Dr. Linsly R. Williams, director.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

At a Stated Meeting of the Academy held December 2, the amendments to the Constitution and By-laws proposed at the Stated Meeting of November 4, were adopted. The amendments are as follows:

Article VI, Section 2a, of the Constitution: The Committee on Library shall consist of five members, each one of whom shall be elected for a term of five years, one retiring and one being elected each year.

2b. The Committee on Admission shall consist of nine members, each of whom shall be elected for a term of three years, three retiring and three being elected each year.

Article XVII, By-laws—Admission Fee and Dues:

Section 1. Each and every newly-elected Fellow shall pay an admission fee of fifty dollars except as herein set forth. . . .

Section 2. The annual dues of Fellows residing or having an office within twenty-five miles of the City Hall, New York City, shall be $40. These dues shall be payable semi-annually. The annual dues of Fellows residing twenty-five miles or more from the City Hall, New York City, shall be $10. The annual dues of Associate Fellows shall be $20.

ANNOUNCEMENTS

There are still on hand a limited number of photographs of the dinner given by the Fellows of the Academy to the newly-elected Honorary Fellows, which was held on November 17. The price is three dollars.

The Council has decided that the meetings of the Trustees and of the Council be held on the same day, that is the fourth Wednesday of each month.

By direction of the Council a house committee of three Fellows has been appointed by the President to advise with the Director as to house rules.

DEATHS OF FELLOWS OF THE ACADEMY

The Council of the Academy, at its meeting held November 24, took the following action in the death of Dr. Jacobus:

"In the death of Dr. Arthur Middleton Jacobus, The New York Academy of Medicine has lost an old friend and loyal Fellow, who had for years served the Academy as Recording Secretary, Statistical Secretary and Historical Secretary.

"In addition, Dr. Jacobus served as a member of the Board of Trustees for twenty years, from 1893 to 1912, and also as a member of the Council during this period.

"Dr. Jacobus was deeply interested in the welfare of the Academy and always scrupulously attentive to his duties, he rendered a great service to the Institution.

Be it, therefore,

"RESOLVED: That the Council of The New York Academy of Medicine hereby records its appreciation of his services to the Academy and its own sorrow in the loss of a valued former member; and, be it further

"RESOLVED: That a copy of this resolution be sent to his family and published in the BULLETIN."

ERNEST SIMONS BISHOP, M.D., 15 West 73rd Street, New York, N. Y.; graduated in medicine from Cornell University Medical College, 1908; elected a Fellow of the Academy February 6, 1913; died November 15, 1926. Dr. Bishop was a member of the County and State Medical Society, a Fellow of the American Medical Association, a Fellow of the American College of Physicians, a member of the American Public Health Association, a member of the American Therapeutic Society, and a member of the Society of Alumni of Bellevue Hospital. He was consulting physician at St. Mark's Hospital, and visiting physician at St. Joseph's Hospital.

SAMUEL JEROME DRUSKIN, M.D., 1 West 123rd Street, New York, N. Y.; graduated in medicine from Cornell University Medical College, 1902; elected a Fellow of the Academy January 4, 1918; died November 23, 1926. Dr. Druskin was a member of the County and State Medical Society, a Fellow of the American Medical Association, a Fellow of the American College of Surgeons, and a member of the American Society for the Advancement of Science. He was attending obstetrician at Sydenham and Jewish Memorial Hospitals, attending obstetrician and associate gynecologist at Beth David Hospital, and attending surgeon at Jewish Maternity Hospital.

CHARLES SCHRAM, A.B. (Yale, 1881), A.M., M.D., 64 East 86th Street, New York, N. Y.; graduated in medicine from Harvard Medical College, 1886; elected a Fellow of the Academy May 30, 1894; died November 27, 1926. Dr. Schram was a member of the

County and State Medical Society, and a Fellow of the American Medical Association.

JOHN GARDNER PERRY, M.D., 371 Commonwealth Avenue, Boston, Mass.; graduated in medicine from Harvard Medical School, 1863; elected a Fellow of the Academy April 1, 1880; died December 3, 1926.

GLENWORTH REEVE BUTLER, M.D., A.M. (Hamilton College, 1880), Sc.D. (Hamilton College, 1904), F.S.Sc., LL.D., 226 Gates Avenue, Brooklyn, N. Y.; graduated in medicine from the Long Island College Hospital, 1880; elected a Fellow of the Academy October 5, 1893; died December 6, 1926. Dr. Butler was a member of the County and State Medical Society, a Fellow of the American Medical Association, a Fellow of the American College of Physicians, a Fellow of the American Climatological Association, a member of the Pathological Society, senior physician at Methodist Episcopal and Brooklyn Hospitals, consulting physician at Coney Island, Kingston Avenue, Long Island College, Bikur-Cholim, Zion, Portchester, Bushwick, Norwegian, Brownsville and East New York, and Broad Street Hospitals.

The following resolution was passed by the Council of the Academy at its meeting of December 22:

"Dr. Glentworth R. Butler was a loyal Fellow of The New York Academy of Medicine and Vice-President from 1911 to 1914. By his interest, pleasing manner and medical skill he soon forced his way to the top of the medical profession in Kings County. He was associated with the Brooklyn Hospital, the Long Island College Hospital, and was a teacher of note in the Long Island College Hospital Medical College. He was the author of text books and many other articles on medicine.

"The Council of The New York Academy of Medicine hereby records its sense of loss and desires that a copy of this minute be attached to the record of the proceedings of the Council and a copy published in the BULLETIN of the Academy and sent to the family of Dr. Butler."

ARTHUR SEYMOUR TENNER, A.B., M.D., 70 East 56th Street, New York, N. Y.; graduated in medicine from the College of Physicians and Surgeons, 1896; elected a Fellow of the Academy November 2, 1916; died November 30, 1926. Dr. Tenner was a member of the County and State Medical Society, a Fellow of the American Medical Association, attending eye surgeon at Mid-town Hospital, and eye surgeon at Post Graduate Hospital.

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